

**WHAT IS CLAIMED IS:**

1. A proteinaceous biopolymeric material having a cellular foam structure.
2. A biopolymeric material which is the reaction product of human or animal-derived protein material and a di- or polyaldehyde in the presence of a bicarbonate and an acidic titrant in amounts sufficient to impart a cellular foam structure to the material.
3. The biopolymeric material of claim 2, wherein the protein is bovine or human serum albumin.
4. The biopolymeric material of claim 2, wherein the aldehyde is glutaraldehyde.
5. The biopolymeric material of claim 1, 2, 3 or 4, wherein the bicarbonate is an inorganic bicarbonate.
6. The biopolymeric material of claim 5, wherein the inorganic bicarbonate is at least one selected from the group consisting of bicarbonates of sodium, potassium, aluminum and iron.
7. The biopolymeric material of claim 1, wherein the bicarbonate is an organic bicarbonate.
8. The biopolymeric material of claim 7, wherein the organic bicarbonate is ammonium bicarbonate.

098614-1001

9. The biopolymeric material as in claim 2, wherein the acidic titrant is at least one acid selected from the group consisting of phosphoric acid, sulfuric acid, hydrochloric acid, acetic acid and citric acid.

10. The biopolymeric material of claim 1, which further comprises biocompatible fibrous and/or particulate materials.

11. The biopolymeric material of claim 1, which is adhesive.

12. A method of making a biopolymeric material having a cellular foam structure comprising introducing a blowing agent into a proteinaceous cross-linkable pre-polymeric liquid material, and allowing the liquid material to cross-link simultaneously with evolution of gas from said blowing agent to thereby form the biopolymeric material having a cellular foam structure.

13. A method as in claim 12, which comprises reacting a first aqueous solution of human or animal-derived protein material and a second aqueous solution of a di- or polyaldehyde in the presence of a bicarbonate and an acidic titrant in amounts sufficient to generate the gaseous blowing agent and thereby impart a cellular foam structure to the material.

14. A method as in claim 13, wherein said first aqueous solution of human or animal-derived protein material includes said bicarbonate, and wherein said second aqueous solution of said di- or polyaldehyde includes said acidic titrant.

FOOT 12 9860

15. A method as in claim 13 or 14, which further comprises allowing the biopolymeric material to expand to a volume which is greater than respective combined volumes of the aqueous solutions.

16. A method as in claim 13, wherein said first aqueous solution is neutral or slightly alkaline.

17. A method as in claim 16, wherein the second aqueous solution is acidic.

18. A method of making a biopolymeric material having a cellular foam structure comprising introducing a gaseous blowing agent into a proteinaceous pre-polymeric liquid material, and allowing the liquid material to solidify to thereby form the biopolymeric material having a cellular foam structure.

19. A method of treating a tissue site, which comprises applying to the tissue site a proteinaceous pre-polymeric liquid material containing a gaseous blowing agent, and allowing the liquid material to solidify to thereby form the biopolymeric material having a cellular foam structure.

20. The method of claim 19, which comprises applying to the tissue site a mixture of a first aqueous solution of human or animal-derived protein material and a second aqueous solution of a di- or polyaldehyde in the presence of a bicarbonate and an acidic titrant in amounts sufficient to form *in situ* a biopolymeric material having a cellular foam structure to the material.

0995124-1001  
FOOT-1218660

21. The method of claim 20, wherein said first aqueous solution of human or animal-derived protein material includes said bicarbonate, and wherein said second aqueous solution of said di- or polyaldehyde includes said acidic titrant.

22. The method of claim 19 or 20, which further comprises allowing the biopolymeric material to expand to a volume which is greater than respective combined volumes of the aqueous solutions.

23. The method of claim 20, wherein said first aqueous solution is neutral or alkaline.

24. A method of claim 20, wherein the second aqueous solution is acidic.

25. The method of claim 20, wherein the first and second aqueous solutions are introduced as a mixture onto the tissue site.

26. The method of claim 12, 19 or 20, which comprises incorporating into the biopolymeric material a biocompatible fibrous or particulate material.

27. The method of claim 20, wherein the tissue site is in need of repair, and wherein the method comprises applying the proteinaceous pre-polymeric liquid to the tissue site in sufficient quantity to repair the same.

28. A cell or tissue growth matrix which comprises a biopolymeric material ~~as in~~ any one of claims 1-11.

FOOTNOTES

29. The cell or tissue growth matrix of claim 28, which includes at least one type of cells growing thereon selected from the group consisting of human, animal and plant tissue cells.

30. A kit for forming a proteinaceous biopolymeric material comprising separate reactable aliquot portions of a first aqueous solution containing a proteinaceous material, and a second aqueous solution which is reactable with the proteinaceous component of the first aqueous solution to form a proteinaceous biopolymeric material, and wherein the first aqueous solution includes a blowing agent, and wherein said second aqueous solution includes an acidic titrant reactable on contact with the blowing agent sufficient to evolve a gas to impart a cellular foam structure to the proteinaceous biopolymeric material.

31. The kit of claim 30, wherein the first aqueous solution comprises human or animal-derived protein material and wherein the second aqueous solution comprises a di- or polyaldehyde.

32. The kit of claim 31, wherein the protein is bovine or human serum albumin.

33. The kit of claim 31, wherein the aldehyde is glutaraldehyde.

34. The kit of any one of claims 30-33, wherein the inorganic blowing agent is a bicarbonate.

0986124-11031  
TOP SECRET

35. The kit of claim 34, wherein the bicarbonate is at least one selected from the group consisting of bicarbonates of sodium, potassium, aluminum and iron.

36. The kit of claim 30, wherein the blowing agent is an organic bicarbonate.

37. The kit of claim 36, wherein the organic bicarbonate is ammonium bicarbonate.

38. The kit of claim 30, wherein the acidic titrant is at least one acid selected from the group consisting of phosphoric acid, sulfuric acid, hydrochloric acid, acetic acid and citric acid.

39. The kit of claim 30, wherein at least one of the first and second aqueous solutions includes biocompatible fibrous and/or particulate materials.

40. The kit of claim 30, wherein the first and second aqueous solutions are sterilized.

0996124-10701